



Dacryocystorhinostomy With and Without Silicone Stent: Is There Any Significant Difference into the Outcomes?

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Abstract

Aim: To compare the difference between the outcomes of endonasal endoscopic dacryocystorhinostomy (En-DCR) with and without silicone tube intubation (stent) for treatment of primary dacryocystitis and phlegmonous dacryocystitis. Method: A hospital based retrospective comparative study of 111 subjects operated for dacryocystitis between October 2014 to May 2021 were analyzed, of which 60 were with silicone stent and 51 were without silicone stent. Silicone tubes were kept in the lacrimal passages for 3 months. In this study we compare the surgery follow up from 3 to 6 months and the complication after each surgery. Surgery was defined as a functional success when there was no evidence of postoperative epiphora, purulent secretions, infection, granuloma, recurrence of dacryocystitis observed upon endonasal endoscopic evaluation. Results: A total of 111 consecutive endoscopic transnasal dacryocystorhinostomy procedures performed at American Hospital 1 of Tirana between October 2014 and May 2021 were reviewed. Of the 111 patients with acute dacryocystitis, 60 (54.05%) were treated with silicone stent (group A) and 51 (45.94%) were treated without silicone stent (group B). 20 of 111 (18%) were diagnosed with phlegmonous dacryocystitis of which 7 (11.67%) were part of group A and 13 (25.49%) were part of group B. On six months of surgery all the patients were followed up. Only 7 patients (11.66%) in the group A had complications such as purulent secretions (2 or 28.57%), infection (3 or 42.85%), epiphora (1 or 14.28%), granuloma (1 or 14.28%) and none in the group B had any of them. No complications were encountered in patients with phlegmonous dacryocystitis. Conclusion: Dacryocystorhinostomy with silicone tube intubation and without silicon tube intubation are two different procedures without any significant difference in the rate of success. In the light of differences in its complications this study supports the routine without silicone stent of acute dacryocystitis and phlegmonous dacryocystitis patients following En-DCR surgery, suggesting that stents are not necessary for primary DCRs.

Keywords: En-DCR, silicone tube (stent), dacryocystitis, phlegmonous dacryocystitis, dacryocystorhinostomy

1. Introduction

Acute dacryocystitis (AD) is a condition defined as "a medical urgency which is clinically associated by rapid onset of erythema, pain, and swelling, classically below the medial canthal tendon with or without preexisting epiphora mainly resulting from the acute infection of the lacrimal sac and perisac tissues"ⁱ Untreated, dacryocystitis is capable of progressing to a vision or life-threatening condition, because the infection may evolve to preseptal cellulitis, orbital cellulitis, meningitis, and even cavernous sinus thrombosis and death.ⁱⁱ External or endoscopic Dacryocystorhinostomy (DCR) is associated with good outcomes for Nasolacrimal Duct Obstruction (NLDO), in patients with or without a previous history of dacryocystitis. The procedure gained popularity due to its surgical approaches success and relatively low rate of complications. The external approach is made through a skin incision near the lacrimal sac but is thought to be contraindicated because of its potential to spread infections to other soft tissues and evolving to sepsis.ⁱⁱⁱ The endoscopic

approach is performed through the nasal cavity with the aid of a nasal endoscope, avoiding the skin incision.^{iv} Endonasal endoscopic dacryocystorhinostomy (En-DCR) surgical approaches had a success rate comparable to that of external dacryocystorhinostomy in AD patients^{vivii}. The utility of silicone intubation (SI) used in dacryocystorhinostomy has been questioned because of many potential problems including patient discomfort, premature prolapse, granulation tissue, cheese-wiring of the canaliculi, epistaxis, fibrous adhesions, canaliculitis, and increased cost.^{viiiixx}

However, whether or not SI is appropriate during En-DCR surgery in AD patients remains unclear, with some authors reporting the use of such an approach, whereas others forgo it.^{xixii}

This study was designed to compare the surgical outcomes of DCR surgery with silicone stent and without silicone stent for treatment of primary dacryocystitis and phlegmonous dacryocystitis.

2. Materials and Methods

A hospital based retrospective comparative study conducted at American Hospital 1, Tirana. Patients were all referred from our ophthalmologist specialist. The needed information such as history, clinical finding, surgical procedures and post-operative outcome on one week, three month and six months follow-up were all recorded from hospital database. The study includes 111 patients with dacryocystitis who underwent En-DCR, of which 60 patients with silicone tube intubation (group A) and 51 without silicone tube intubation (group B) during the period of October 2014 to May, 2021. Of the 111 patients, 20 patients were diagnosed with phlegmonous dacryocystitis, 7 from group A and 13 from group B. Silicone tubes were kept in the lacrimal passages for 3 months. There were patients with bilateral dacryocystitis in this study but they were count as two different cases, (two eyes). This was because we applied different surgery procedures for different eyes. Surgery was defined as a functional success when there was no evidence of postoperative epiphora, purulent secretions, infection, granuloma, recurrence of dacryocystitis observed upon endonasal endoscopic evaluation.

3. Procedure

3.1 Surgical technique

The two surgical procedures were performed from the same surgeon in the above period of time.

A lateral nasal-wall flap, based on the anterior edge of the uncinata, was fashioned with sickle

knife and raised gently with Freer elevator to expose the maxillary frontal process and the lacrimal bone. The flap was tucked under the middle turbinate and the lacrimal bone was

removed with the Kerrison punch, exposing the lacrimal sac. To insert a silicone tube at the end of the procedure was optional, depending on the case. When utilized, it was inserted and fixed through the superior and inferior canaliculi, leaving a small gap in the external eye cantus. In patients without silicone tube, PosiSepX splint was used for homeostasis.

3.2 Post operative follow up

All patients were prescribed an oral antibiotic to be taken two times per day for 7 days after surgery (Cefuroxime 500 mg and Paracetamol 500 mg in case of pain and fever). Tobradex (Tobramycin/ Dexamethasone) twice daily for one week. Nasal wash with normal saline and 4 flacones of Budesonide for two months and the massage of the lacrimal sac. Patients were seen at 1 week when intranasal splint was aspirated, 3 months when the silicone tubes were removed and 6 months after surgery. Silicone stents were removed at 16 weeks follow-up appointment.

3.3 Inclusion and exclusion criteria

The study has included dacryocystorhinostomy surgeries of subjects diagnosed with dacryocystitis and phlegmonous dacryocystitis performed from October 2014 to May 2021, at American Hospital 1 of Tirana. Patients who had undergone previous lacrimal surgery and the post operative pain, as a subjective complication, were excluded.

4. Results

A total of 111 patients were included in the study. 27 (24.32%) were males and 84 (75.68%) were females with the minimum of age 1 year old and the maximum of 82 years old.

Of the 111 patients with acute dacryocystitis, 60 (54.05%) were treated with silicone stent (group A) and 51 (45.94%) were treated without silicone stent (group B). 20 of 111 (18%) were diagnosed with phlegmonous dacryocystitis of which 7 (11.67%) were part of group A and 13 (25.49%) were part of group B.

On three months of surgery the silicone stents were removed and all the patients were followed up.

Of 60 patients with silicone tube (group A), 7 (11.66%) had complication such as purulent secretions (2 or 28.57%), infection (3 or 42.85%), epiphora (1 or 14.28%), granuloma (1 or 14.28%) and none in the group B had any.

Success rate after 3 months follow-up were, respectively, 76.7 % in the stent group and 100.0% in the non-stent group.

No complications were encountered in patients with phlegmonous dacryocystitis.

The rest of both groups had no complaints and normal mucosa during endoscopic evaluation.

5. Discussion

Endoscopic DCR is a surgical procedure for acute dacryocystitis which can be done with or without using silicone stent. Both procedures are widely performed and offer good outcomes. Endocanalicular stenting is believed to maintain the patency of the ostium during the postoperative period and healing process but its role remains to be determined. On the other hand, some studies indicate that the silicone stent itself is a reason for peristomal granuloma and the reduction of the ostial size, scar tissue formation and turbinoseptal synechia.^{xiii} DCR without a stent has the advantage of minimizing complications, discomfort, the cost of stenting and follow up visits after endonasal DCR surgery.^{xiv}

There continues to be some discussion regarding the use of stents for DCR.

This study aims to compare the complications between endoscopic DCR with and without stenting. Complete relief of symptoms was seen in 76.7% of the stent group and in 100% of the non-stent group at three months after the operation. Interestingly, in 20 patients with phlegmonous dacryocystitis, there was no evidence of complication in both groups, A and B.

Jin *et al* reported a primary success rate of 83% for endoscopic DCR with a stent and in 17% of cases, the rhinostomy opening was found to be obstructed by granulations or synechia formation.^{xv} Singh *et al* reported a success rate of 92.6% for endoscopic DCR without a stent, with no major complication reported.^{xvi} Longari *et al* reported success rate after 18 months follow-up, 82.2 % in the stent group and 88.6 % in the non-stent group.¹⁴ The use of stents in our study was found to be associated with purulent secretions, infection, epiphora, granuloma, recurrence of dacryocystitis. Referring to its definition of functional success, this study strongly supports the routine without silicone stent of DCR patients following dacryocystorhinostomy surgery.

There are certain limitations to this study. There were only few male patients among those who had DCR surgery. Therefore the comparison was not between a homogenous group. The sample of phlegmonous dacryocystitis patients was not equal nor big enough comparing to the AD patients so a uniform analysis could not be performed.

This was the first study done in Albania about acute dacryocystitis performed without silicone tube. Although its limitations, we found it valuable to share our experience among ophthalmologists and ENT surgeons of our country.

6. Conclusion

In our study, endoscopic DCRs without the use of silicone stenting showed higher success rates for both acute dacryocystitis and phlegmonous dacryocystitis compared with the DCRs with stenting. This encourages that stents are not necessary for primary DCRs and may be associated with a worse outcome.

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